

May the new developed implant surface, coated with pH buffering agent fasten osseointegration?

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Abstract

Reducing the healing time has become one major focus of implant research. Different approaches have been attempted to reduce implant healing time as well as the materials. Buser et al. demonstrate that titanium implants with a modified surface can predictably achieve successful tissue integration when loaded in full occlusion 21 days after placement. Recently released a new implant surface modified with pH buffering agent to improve osseointegration, has shown promising basic research results.

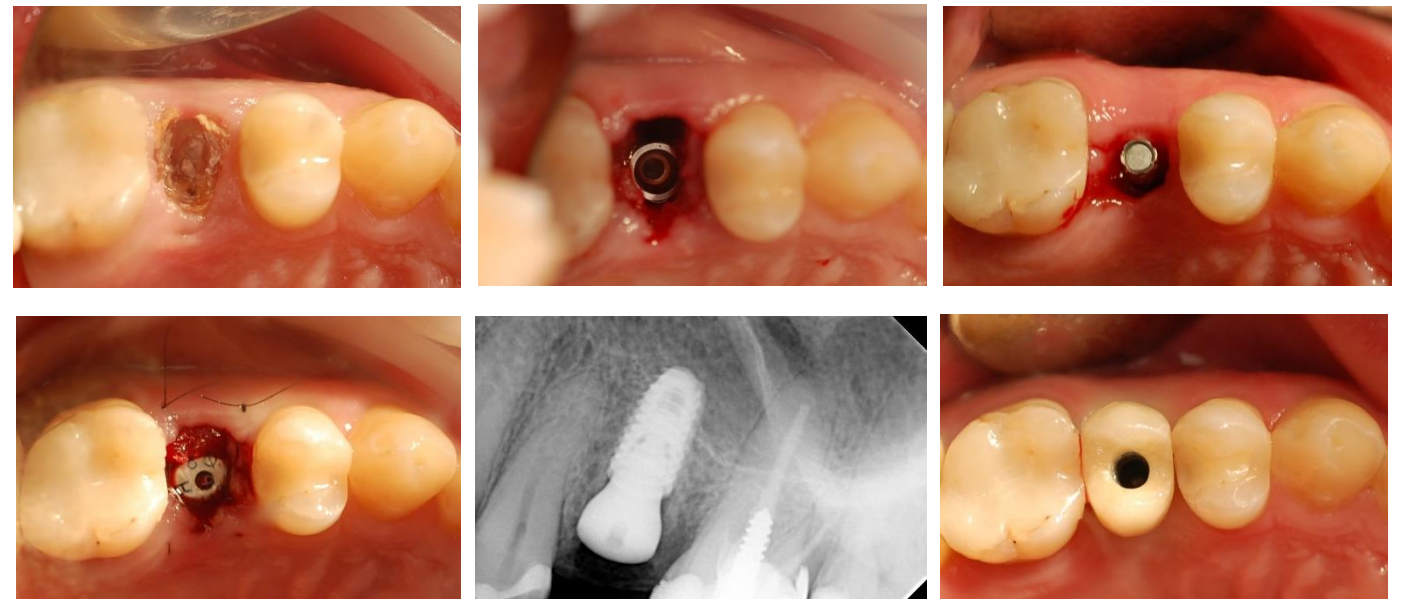
The aim of this clinical report is to present a graft-less, immediate implantation combined with transcresal sinus floor elevation case where a new implant surface was used to promote osseointegration, and fasten the treatment time.

A 39 Year old men with general good health required extraction of root 25. Implant therapy was planed to be performed to restore the tooth. At the basis of CBCT examination immediate implantation with an implant 4,5x8,5 mm to be placed 2 mm subcrestal to the buccal plate level. Placing such a positioned implant required entering to the maxillary sinus with a drills and slightly with an apex of the implant. After local anaesthesia with drilling through the root protocol maxillary sinus floor was reached at 10 mm depth. A non cutting tip drill 2,8mm (CAS Kit, Osstem Implant) was used to protrude into the sinus without damaging a Shneiderian membrane. Root was sectioned and extracted. Sinus membrane was elevated by means of fluid introduced under finger pressure of syringe piston connected with a tube and silicon valve and pressed against socket. Implant TSIII SOI (Osstem Implant, South Korea) was placed graftless with an initial stability 77/77/77 ISQ. Healing abutment was connected.

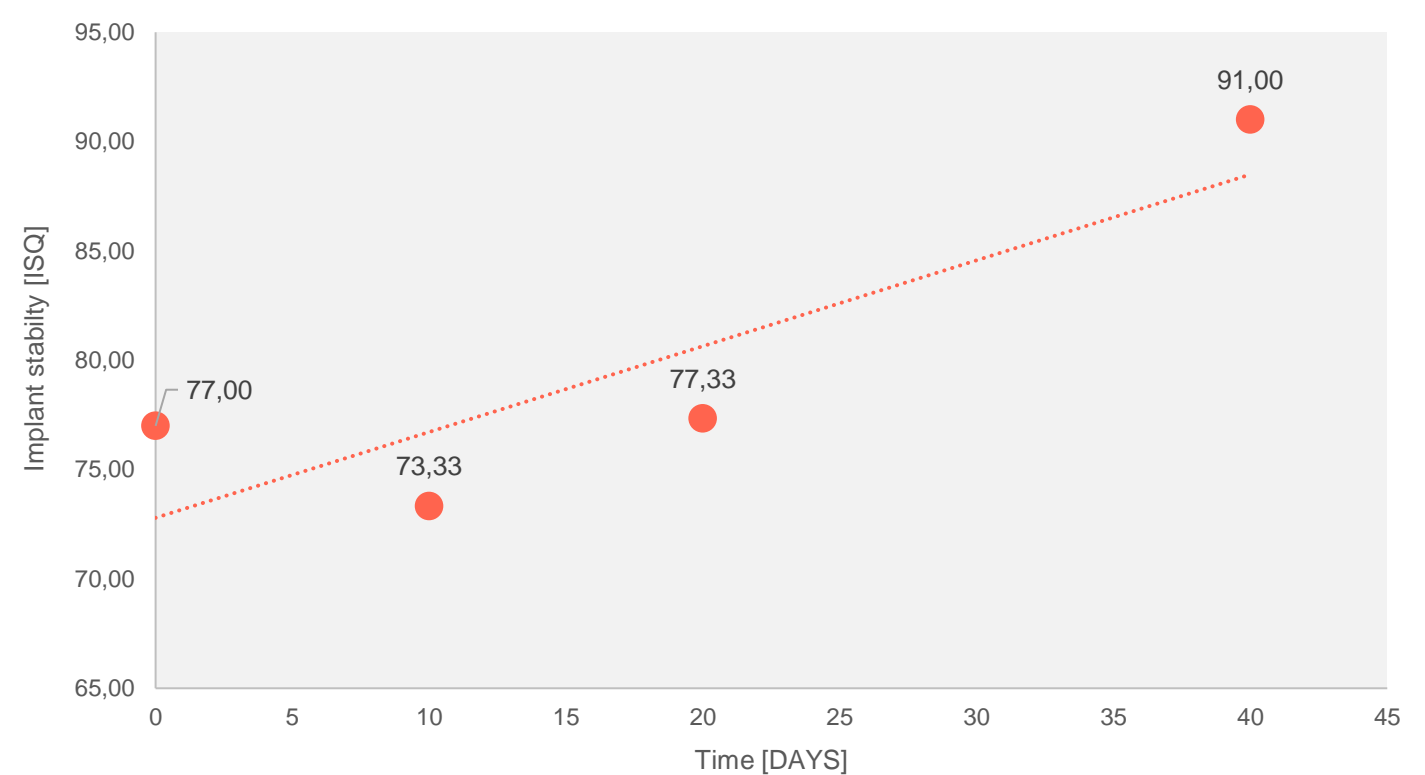
The observation of implant stability quotient were done four times with Multipeg 29. attached to the implant with hand driver and measurement device IS3 monitor (Osstem Implants, South Korea). First at day of surgery (Day 0) before healing cup placement. Following measurements were done at check up appointments, after unscrewing the healing abutment each time (Day 10, 20 and 40). Following measurements in ISQ were obtained at days 0, 10, 20 and 40 respectively- 77/77/77; 72/76/72; 76/80/76; 91/91/91. In 20th day post surgery when mean value of ISQ increased over initial level, an impression was done to perform a permanent full ceramic crown. Long time required for dental lab work makes crown delivery in another 20 days (Day 40) and final implant stability quotient measurements revealed significant increase of stability. At the same appointment the final, screw retained full ceramic crown was delivered. X-ray controls were done at Days 0, 20 and 40 revealed a proper bone remodeling.

This is only a single case presentation but its results as well as available animal study may lead that the new developed implant surface, coated with pH buffering agent (SOI) may promote higher degree of early osseointegration. Nevertheless, that study cannot be taken as a reference for clinicians and further research is needed to investigate the potential of this surface treatment as a method to improve osseointegration

Results



ISQ values in time



Background and Aim



Conclusion

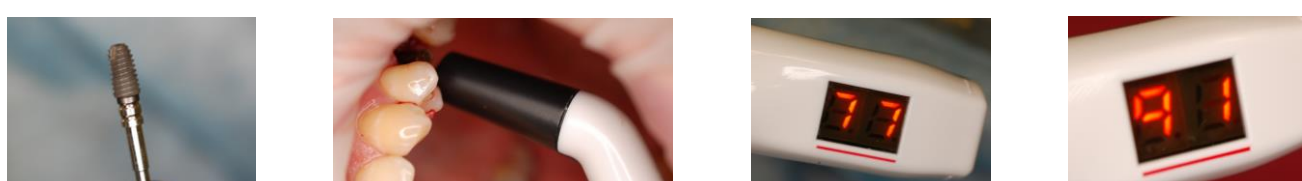
The new developed implant surface, coated with pH buffering agent (SOI) may promote higher degree of early osseointegration.

Nevertheless, that study cannot be taken as a reference for clinicians and further research is needed to investigate the potential of this surface treatment as a method to improve osseointegration.

Acknowledgement: An implant used in this study was supported by Osstem Implants as a part of project: Clinical evaluation and primary stability of early loaded implants with Sandblasted and Acid-etched (SA) surface versus implants with SA surface modified with pH buffering agent (SOI) for the rehabilitation of single implant-supported crown: a multicenter randomized controlled trial.

Methods and Materials

Tapered body TSIII SOI implant (Osstem Implant, South Korea) was placed graftless into a fresh extraction socket of tooth 25, following slight transcresal sinus floor elevation by CAS drill (Osstem Implant, South Korea) and hydraulic pressure of sterile saline solution. Following measurements of implant stability quotient by means of Multipeg 29. and IS3 monitor (Osstem Implants, South Korea) were done at days 0, 10, 20 and 40.



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